

APPENDIX H

GEOPHONE WELL #1 COMPLETION REPORT

Archer Daniels Midland Company

UIC Permit No. UIC-012-ADM
Illinois Environmental Protection Agency
Bureau of Land
Class I – Non-Hazardous Permit

UIC Form 4h, ADM Verification Well #1 Completion
Report
Revised July 19, 2011

Geological Sequestration in the Illinois Basin



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NOTE: Appendices have been numbered to correspond to the specific section of the Completion Report Form 4h with which they are associated. Not all sections are accompanied by appendices.

List of Abbreviations

ADM, Archer Daniels Midland
Aka, also known as
Bbls, barrels
BHA, bottom hole assembly
BHCT, bottom hole circulating temperature
BHST, bottom hole static temperature
BOD, basis of design
BOP, blow out preventer
B-T gauge, Bourdon-tube gauge
BTU, British thermal unit
CBL, cement bond log
CCS, carbon capture and sequestration
Cf, cubic feet
Cf/sk, cubic feet per sack
CFR, Code of Federal Regulations
Cm, centimeter(s)
CMR, combinable magnetic resonance
CO₂, carbon dioxide
Csg, casing
D&CWOP, Drill and complete well on paper
Eg, for example
EMR, electronic memory recorder
EOR, enhanced oil recovery
F, fahrenheit
FEED, front end engineering design
FMI, formation micro imager
FOT, fall-off test
Ft., foot or feet
Ft/h, feet per hour
Ft/min, feet per minute
Gal/sk, gallons per sack
GR, gamma ray
HP, high pressure
Hr, hour
ID, inside diameter
IEPA, Illinois Environmental Protection Agency
ISGS, Illinois State Geological Survey
KCl, potassium chloride
L (l), liter(s)
Lb (lbs), pound (pounds)
Lb/ft, pounds per foot
Lb/sk, pounds per sack
M (m), meter(s)
M/h, meters per hour
MASIP, maximum allowable surface injection pressure

MDT, Modular Dynamics Tester* (mark of Schlumberger)
MeV, milli electronvolts
Mg/L, milligrams per liter
MGSC, Midwest Geologic Sequestration Consortium
MI, move in
MO, move out
MVA, monitoring, verification, and accounting
NaCL, sodium chloride
N/A, not applicable
NPDES, National Pollution Discharge Elimination System
NRC, Nuclear Regulatory Commission
OD, outside diameter
P&A, plugging and abandonment
PBTD, Plug back total depth
POOH, pull out of hole
Ppg, pounds per gallon
Psi, pounds per square inch
Psi/ft, pounds per square inch per foot
PV, plastic viscosity
QA, quality assurance
QA Zone, quality assurance zone
QHSE, quality, health, safety, and environment
Qty, quantity
RD, rig down
RU, rig up
RST, Reservoir Saturation Tool* (mark of Schlumberger)
S, seconds
SACROC, Scurry Area Canyon Reef Operators Committee
Sk, sack
SIP, surface injection pressure
SP, spontaneous potential
SRPG, surface-readout pressure gauge
SRTs, step rate tests
Sxs, sacks
TBD, to be determined
Tbg, tubing
TD, total depth
TDS, total dissolved solids
TIH, trip in hole
TOH, trip out of hole
UIC, underground injection control
US DOE, United States Department of Energy
USEPA, United States Environmental Protection Agency
USDW, underground source of drinking water
VDL, variable density log
WFL, water flow log
WOC, wait on cement
XPT, pressure express tool

UIC Form 4h, Verification Well #1 Completion Report

DRAFT UIC PERMIT FORMS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT APPLICATION

FORM 4h - WELL COMPLETION REPORT

USEPA ID NUMBER: ILD984791459

IEPA ID NUMBER: 1150155136

WELL NUMBER: ADM Verification Well #1

I. Type of Permit

Individual: _____

Emergency _____

New _____

Renewal _____

Permit Number _____

Area: Completion Report

Number of well ADM Verification Well #1

Name of Field _____

Emergency _____

New _____

Renewal _____

Permit Number UIC-012-ADM

Location in Application

II. Location, see instructions

A. Township-Range-Section:

Verification Well #1 is located 605 feet North and 1175 feet East in the Southwest quadrant of Section 32 of Township 17 North and Range 3 East, Macon County, IL.

B. Latitude/Longitude:

The latitude and longitude coordinates of the well in degrees-minutes-seconds are 39° 52' 47.2620" N and 88° 53' 36.0924" W.

C. Closest Municipality

The closest municipality to the well is Decatur, Macon County, IL.

III. Surface Elevation

Surface elevation of the well is 669 feet (203.9 meters) above Mean Sea Level.

IV. Well Depth

The well was drilled to a total measured depth of 7272 feet (2216.5 meters) below the drilling rig kelly bushing (RKB). NOTE: the RKB is 15 feet (4.6 meters) above the surface elevation, or 684 feet (208.5 meters) above Mean Sea Level.

V. Static Water Level

The static water level in the well is 194 feet (59.1 meters) above Mean Sea Level.

VI. Demonstrated Fracturing Pressure, if applicable

Since this well will not be used for injection, no tests were performed to demonstrate the fracture pressure.

VII. Verification Well Completion

The Verification Well #1 is fully-cased and perforated at the intervals indicated in Table 1.

Table 1: Perforation Details

Port No.	Perf Top (MD feet)	Perf Bottom (MD feet)	Formation Name	Shot Phasing (deg)	Total Shots
Z11 MP	4917.5	4920.5	Ironton- Galesville	60	18
Z 10 MP	5000.7	5003.7	Ironton- Galesville	60	18
Z 9 MP	5653.8	5657.3	Mt. Simon	120	11
Z 8 MP	5840.4	5843.9	Mt. Simon	120	11
Z 7 MP	6416.2	6419.7	Mt. Simon	120	11
Z 6 MP	6632.3	6635.8	Mt. Simon	120	11
Z 5 MP	6720.3	6723.8	Mt. Simon	120	11
Z 4 MP	6837.1	6840.6	Mt. Simon	120	11
Z 3 MP	6945.6	6949.1	Mt. Simon	120	11
Z 2 MP	6983.0	6986.5	Mt. Simon	120	11
Z 1 MP	7061.2	7064.2	Granite Wash	60	18

VIII. Well schematic or other appropriate drawing of surface and subsurface construction details

Please see the Verification Well #1 wellbore, wellhead, and bottom hole completion assembly schematics included in Appendix VIII with this report.

IX. Well Design and Construction

Please see Appendix IX for the Contractor Morning Reports, Drilling Mechanics Log, and Daily Completion as-built Reports which summarize the rig performance and operations throughout the drilling and completion of the well.

A. Well hole diameters and corresponding depth intervals

The well was drilled in three stages with the following depth intervals and wellbore diameters:

Surface Hole: 0 – 377 feet, 17.5-inch diameter

Intermediate Hole: 377 – 5322 feet, 12.25-inch diameter

Final Hole: 5322 – 7272 feet, 8.5-inch diameter

B. Annulus Protection System

Verification Well #1 will not be used for injection, however, the well has been constructed in a way that meets the requirements of Part 704 UIC Permit Program Subpart E, Permit Conditions Section h to establish and maintain mechanical integrity and part 730 Underground Injection Control Requirements, Section 730.108 Mechanical Integrity.

The surface, intermediate, and long casing strings are cemented to surface so there are no open annuli between these strings.

Due to the unique completion design of the Verification Well #1, the annulus of the well is defined as the volume above the uppermost Westbay packer (#28) and the surface. More specifically, this space will be the annulus between the 2-7/8-inch OD tubing and the 5 ½ inch, 17 lb/ft casing (4.892 inch ID).

Throughout the operation of the well, the annulus between the 2-7/8-inch tubing and the 5 ½ inch long string casing will be continuously monitored at the wellhead to verify that pressure is within the limits prescribed in the permit language (14 – 100 psia). Annulus pressure within the prescribed limits can be construed as evidence of mechanical integrity in the annular space, which will also be confirmed annually via the test described in section X.C. of this report.

1. Annular space, ID and OD (inches)

The annular spaces between the wellbore tubulars are detailed

below and reflect the various casing/tubing sizes that were used in the wellbore design.

Surface (0 – 377 feet): 13.375 inches / 17.5 inches

Intermediate (0 – 5322 feet): 9.625 inches / 12.615 inches

Long (0 – 7272 feet): 5.5 inches / 8.835 inches

Production Tubing (0 – 4745 feet): 2.875 inches / 4.892 inches

Westbay Tubing (4745 – 7128 feet): 2.5 inches / 4.892 inches

2. *Type of annular fluid(s)*

The fluids occupying the annular spaces between the wellbore tubulars are described below.

Surface: fully cemented (see cement details in section XI.C)

Intermediate: fully cemented (see cement details in section XI.C)

Long string: fully cemented (see cement details in section XI.C)

Westbay Tubing: The Westbay monitoring intervals, which are perforated and open to the formation, contain native formation brines, whose density varies slightly depending on the composition of the fluid. The Westbay quality assurance zones (QA), which are not perforated and are isolated against the inner diameter of the long-string casing, contain 9.4 lb/gal NaCl with adomite ASP 539D brine which was used during the installation of the completion system.

Production Tubing: the annular space between the production tubing and the long string casing – above the shallowest Westbay packer – contains 9.4 ppg NaCl brine with Nalco Adomite ASP 539D corrosion inhibitor at a concentration of 2 gallons per 1000 gallons brine.

3. *Specific gravity of annular fluid*

The brine occupying the annulus space between the final casing string and the 2-7/8-inch production tubing has a specific gravity of approximately 1.127. The fluid occupying the annular spaces of the perforated Westbay monitoring intervals varies; therefore, the specific gravity is dependent on the composition of the native reservoir fluid. The fluid occupying the annular spaces of the non-perforated Westbay QA zones has a specific gravity of 1.127.

4. *Coefficient of annular fluid*

The fluid occupying the annulus space between the final casing string and the production tubing has a hydrostatic coefficient of approximately 0.488 psi/ft. The fluid occupying the annular spaces of the perforated Westbay monitoring intervals varies; therefore, the hydrostatic coefficient is dependent on the composition of the native reservoir fluid. The fluid occupying the annular spaces of the non-perforated Westbay QA zones has a specific gravity of 0.488 psi/ft.

5. *Packer(s)*

a. *Setting depth*

There are a total of 28 Westbay MP55 packers in Verification Well #1. Table 2 displays the setting depth of each individual packer.

Table 2: Packer Depths

Packer No.	Top Depth (MD feet)	Packer No.	Top Depth (MD feet)
P28	4823.8	P14	5860.7
P27	4890.7	P13	6389.3
P26	4937.9	P12	6436.5
P25	4973.8	P11	6605.4
P24	5021.0	P10	6652.6
P23	5283.5	P9	6693.4
P22	5329.3	P8	6740.6
P21	5365.2	P7	6811.0
P20	5410.9	P6	6858.2
P19	5456.6	P5	6918.7
P18	5502.4	P4	6956.1
P17	5627.0	P3	7003.3
P16	5674.2	P2	7034.2
P15	5813.5	P1	7081.4

The packers were inflated with tap water in sequence beginning with the deepest. All of the packers were inflated normally with the exception of packers P24 and P26. Packer P24 is positioned below Zone 10 and packer P26 is positioned below Zone 11. During the operation, inflation diagnostics indicated that these two particular packers were not able to maintain the appropriate inflation pressure. These two packers are judged to be uninflated. In each case, the subject packer provided redundancy as part of a 2-packer set

designed to seal inside the casing between two perforated intervals. The second packer of each set (packer P23 and packer P25, respectively) inflated normally and all standard monitoring operations of the well are un-affected.

b. Type

The Westbay packers can be described as steel-reinforced, rubber gland inflatable packers.

c. Name and model

The packers in the completion assembly are Westbay Steel MP55 System MP55 Packer – 90mm Element Part No. 0414100C4. Detailed specifications of these packers were provided with the revisions to the permit modification log UIC-143-M2 received by the IEPA on 15-Nov-2010.

6. Description of fluid spotting frequency, type and quantity

After the 5 ½-inch long string casing was cemented in place, it was filled with a 9.2 lb/gal (0.477 psi/ft equivalent hydrostatic gradient) NaCl completion brine, which was of sufficient density to control fluid movement into the wellbore from open perforations and throughout the installation of the Westbay monitoring system. The maximum reservoir pressure gradient calculated from surface is approximately 0.45 psi/ft, as determined from reservoir pressure measurements acquired during open-hole logging. Prior to installing the Westbay system in the well, 65 barrels of 9.4 ppg sodium chloride brine, with Nalco Adomite ASP 539D corrosion inhibitor at a concentration of 2 gallons per 1000 gallons of brine, were spotted from TD back to 4500 feet. See daily Completion as-built reports in Appendix IX for the detailed chronology of the completion operations.

After the Westbay system was installed and all but the shallowest Westbay packer (P28) was inflated, the pumping port sliding sleeve of QA Zone 16 was opened and the annulus was flushed with approximately 20 bbls of 9.2 lb/gal brine which was circulated through the tubing. This mixture was then replaced with 27.8 bbls of 9.4 lb/gal sodium chloride brine with Nalco Adomite ASP 539D corrosion inhibitor at a concentration of 2 gallons per 1000 gallons of brine. Afterwards, the sliding sleeve in QA Zone 16 was closed and the shallowest packer (P28) was inflated properly, thereby isolating the annular space to surface. The 9.4 lb/gal NaCl brine (with above-mentioned additives) is currently the fluid that resides in the tubing-casing annular space above the shallowest packer.

7. Information on well driller used for construction of this well

The well was drilled with a rotary-table drilling rig with a water-based circulating mud system. Contact information for the drilling company is listed below.

Pioneer Oil field Services, LLC
1290 N State Road 67
Vincennes, IN 47591
(812) 882-0999
Contact Person: Mike Robinson

X. Tests and Logs

A variety of wireline logs and tests were conducted during each stage of drilling and completing the well; the types of logs and tests run are listed below with detailed information included in the file boxes labeled as Appendices X.A-B.

A. During Drilling

Surface Hole:

- Wireline Logs: (Logs included in File Box Appendix X.A-B)
 - Laterolog-GR-SP

Intermediate Hole:

- Wireline Logs: (Logs included in File Box Appendix X.A-B)
 - Neutron-Density-GR Combo
 - Laterolog Resistivity
 - Micro-Resistivity Imaging (FMI)
 - Elemental Capture Spectroscopy
 - Natural Gamma Ray Spectroscopy
 - Formation Pressures (MDT)
 - Rotary Sidewall Cores (routine analysis results included in File Box Appendix X.A-B)
 - SP

Final Hole:

- Wireline Logs: (Logs included in File Box Appendix X.A-B)
 - Neutron-Density-GR Combo Laterolog Resistivity
 - Induction Resistivity
 - Microlog
 - Micro-Resistivity Imaging (FMI)
 - Sonic (MSIP – Sonic Scanner)
 - Elemental Capture Spectroscopy
 - Natural Gamma Ray Spectroscopy

- Magnetic Resonance (CMR)
- Rotary Sidewall Cores (routine analysis results included in File Box Appendix X.A-B)
- Formation Pressures (XPT; summary report included in File Box Appendix X.A-B)
- Conventional Whole Core:

Table 3 Whole Core Intervals (uncorrected driller's depths).

Hole Section (in)	Formation Name	Length (ft)	Est. Top of Formation (ft)	Core Top (ft)	Core Bottom (ft)
12-1/4	New Albany	27	2071	2132	2159
12-1/4	Knox (Gunter-Eminence transition)	46	4238	4218	4264
12-1/4	Knox (Potosi)	46	4344	4513	4559
8-1/2	Eau Claire-Mt Simon transition	139	5017	5425	5564
8-1/2	Mt. Simon	60	5515	5930	5990
8-1/2	Lower Mt. Simon	389	5515	6680	7069

Results of routine analysis on full-diameter whole core samples is included in File Box Appendix X.A-B.

B. During and after casing installation

Surface Hole: (Logs included in File Box Appendix X.A-B)

- Wireline Logs:
 - Cement Bond Log with Variable Density Log (CBL-VDL)

Intermediate Hole: (Logs included in File Box Appendix X.A-B)

- Wireline Logs:
 - Ultrasonic Cement Imaging
 - Cement Bond Log with Variable Density Log (CBL-VDL)

Final Hole:

- Wireline Logs: (Logs included in File Box Appendix X.A-B)
 - Isolation Scanner Image Log
 - Cement Bond Log with Variable Density Log (CBL-VDL)
 - Pressure/Temperature Log
 - Thermal Neutron Decay (Formation Sigma) Log (RST)
 - Multi-finger Casing Caliper Log
 - Casing Collar and Perforating Record Logs
 - Pressure/Temperature Log (Run 2)

C. *Demonstrate mechanical integrity prior to operation*

Once the appropriate completion fluid was spotted in this annular space (see description in section IX.B.6), the mechanical integrity was verified via a positive pressure test conducted on June 10, 2011 and witnessed by IEPA Regional Geologist, Jeff Turner, P.G. During the test, the annulus was pressurized to approximately 317 psig and, once stabilized, demonstrated less than 1 psig leak-off during the hour-long observation period, which is less than the prescribed maximum leak-off criteria of 3%. Please refer to File Box Appendix X.A-B for a plot of the results of the Mechanical Integrity Pressure Test. During the life of the well this same annulus will be pressure tested to at least 200 psig on an annual basis with a maximum of 3% leakoff allowed, as per the permit requirements.

In addition to demonstrating the mechanical integrity of the tubing-casing annulus, the integrity of the entire Westbay system was confirmed through a negative-pressure test. As per the permit requirements, the sealed Westbay completion assembly was to be tested to at least a 100 psi differential pressure and demonstrate no more than 3% leak-off over a one hour period. Such a test was conducted over approximately 20 hours from June 13 to June 14, 2011. In order to conduct the under balance test, the hydrostatic column in the well was reduced via nitrogen gas-lift through the gas-lift mandrel installed in the completion tubing at a depth of 1208 feet KB. The fluid column was successfully lowered to a depth of 1097 feet KB. A Westbay measurement probe was positioned at a depth of approximately 1550 feet KB in order to monitor the pressure throughout the duration of the test. The effective pressure under balance across the Westbay tubing at the position of the measurement probe was estimated to be 535 psi and of a comparable magnitude throughout the rest of the completion. The pressure was then monitored for approximately 20 hours, during which period the pressure was observed to change from 222.2 to 223.3 (1.1 psi), or less than 0.5% of the measured value. A plot of the results of the interior tubing test is included with the File Box Appendix X.A-B.

Finally, zonal isolation between the Westbay packers was verified in both the monitoring and QA zones by means of pre- and post-inflation pressure profile. A plot of the pre- and post-inflation pressure profiles is included in the File Box Appendix X.A-B. The pre-inflation profile reflects the mixed hydraulic head between the monitoring and QA zones when there is no zonal isolation; therefore, the pressure at each measurement point can be observed to lie along a common pressure gradient line. As each subsequent packer is inflated and as each zone is isolated (from deepest to shallowest), the hydrostatic influence of the underlying zone(s) is removed. Therefore, differences between the pre- and post-inflation pressure profiles provide confidence that, in fact, the packers are effectively isolating hydrostatic communication between each zone.

D. Copies of logs and tests listed above

Please see file boxes labeled Appendix X.A-B accompanying completion report for copies of geophysical logs and the results of the various test described above.

E. Description of well stimulation

No stimulation was required for the purpose of this well.

XI. Well Design and Construction

The depth intervals, outer and inner diameters, linear weight, grade, coupling type and coupling outer diameters, and thermal conductivity of the various strings of casing and tubing installed in the well are summarized below with appropriate units indicated. Please see Appendix XI for casing tally sheets and locations of casing centralizers.

A. Casings, see instructions

1. Conductive casing

N/A

2. Surface casing

Top Depth (feet): 0
Bottom Depth (feet): 367
O.D. (inch): 13.375
I.D. (inch): 12.615
Weight (lbs/ft): 54.50
Grade: J55
Coupling Type: STC
Coupling O.D. (inch): 14.375
Thermal Conductivity (BTU/ft-hr-°F): 29.02

3. Intermediate casing(s)

Top Depth (feet): 0
Bottom Depth (feet): 5306
O.D. (inch): 9.625
I.D. (inch): 8.835
Weight (lbs/ft): 40
Grade: N-80
Coupling Type: LTC
Coupling O.D. (inch): 10.625
Thermal Conductivity (BTU/ft-hr-°F): 29.02

4. *Long string casing*

Top Section:

Top Depth (feet): 0
Bottom Depth (feet): 5056
O.D. (inch): 5.5
I.D. (inch): 4.892
Weight (lbs/ft): 17
Grade: J55
Coupling Type: LTC
Coupling O.D. (inch): 6.050
Thermal Conductivity (BTU/ft-hr-°F): 31

Bottom Section:

Top Depth (feet): 5056
Bottom Depth (feet): 7272
O.D. (inch): 5.5
I.D. (inch): 4.892
Weight (lbs/ft): 17.00
Grade: 13Cr85
Coupling Type: BEAR
Coupling O.D. (inch): 6.050
Thermal Conductivity (BTU/ft-hr-°F): 16

5. *Other casing*

N/A

B. *Tubing, see instructions*

Production Tubing

Top Depth (feet): 0
Bottom Depth (feet): 4745
O.D. (inch): 2.875
I.D. (inch): 2.44
Weight (lbs/ft): 6.5
Grade: J-55
Coupling Type: EUE (min)
Coupling O.D. (inch): 3.668
Thermal Conductivity (BTU/ft-hr-°F): 29.02

Westbay Tubing

Top Depth (feet): 4745
Bottom Depth (feet): 7128
O.D. (inch): 2.5
I.D. (inch): 2.26
Weight (lbs/ft): 3.12
Grade: 316L SS

Coupling Type: pin-up/box (captive nut) down, with proprietary Westbay/ACME thread
Coupling O.D. (inch): 3.45
Thermal Conductivity (BTU/ft-hr-°F): 9.246

1. *Maximum allowable suspended weight based on joint strength*

Production Tubing: 99660 lbs (45205 kgs)

Westbay Tubing: 22000 lbs (9979 kgs)

2. *Weight of injection tubing string (axial load) in air*

Production Tubing: 30843 lbs (13990 kgs)

Westbay Tubing: 7466 lbs (3387 kgs)

C. *Cement, see instructions*

Details about the various cement blends used in each stage of the construction of ADM Verification Well #1, including the depth interval, type and grade, additives, quantity, thermal conductivity, and whether or not the cement was circulated to surface, are summarized in the following sections with the appropriate units indicated.

1. *Conductive casing*

N/A

2. *Surface casing(s)*

Depth Interval (feet): 0 – 377
Type/Grade (Lead): Class A
Additives (Lead): Accelerator, LSCM
Quantity (Lead) (sk): 366

Type/Grade (Tail): Class A
Additives (Tail): Accelerator, LSCM
Quantity (Tail) (cubic yards): 365
Circulated: Yes
Thermal Conductivity (BTU/ft-hr-°F): 0.73

3. *Intermediate casing*

Stage 1:

Depth Interval (feet): 3692 – 5322
Type/Grade (Lead): Class H
Additives (Lead):

Additives		
Code	Conc.	Function
D047	0.020 gal/sk blend	Antifoam

Quantity (Lead) (sk): 353.4
Circulated: Yes
Thermal Conductivity (BTU/ft-hr-°F): 0.54

Type/Grade (Slurry): Class H
Additives (Tail):

Additives		
Code	Conc.	Function
D047	0.020 gal/sk blend	Antifoam

Quantity (Slurry) (sk): 348.13
Circulated: Yes
Thermal Conductivity (BTU/ft-hr-°F): 0.74

Stage 2:

Depth Interval (feet): 0 – 3692
Type/Grade (Lead): 35:65 Poz:H
Additives (Lead):

Additives		
Code	Conc.	Function
D020	4.000 %BWOB	Extender
D079	0.400 %BWOB	Extender
D046	0.200 %BWOB	Antifoam
D167	0.400 %BWOB	Fluid loss
D042	5.000 lb/sk blend	LCM/extender
D044	10.000 %BWOW	Salt
D065	0.350 %BWOB	Dispersant

Quantity (Lead) (sk): 979.2
Circulated: Yes
Thermal Conductivity (BTU/ft-hr-°F): 0.54

Type/Grade (Tail): Class H
Additives (Tail):

Additives Code	Conc.	Function
D047	0.020 gal/sk blend	Antifoam

Quantity (Tail) (sk): 99.57

Circulated: Yes

Thermal Conductivity (BTU/ft-hr-°F): 0.74

4. *Long string casing*

Depth Interval (feet): 0 – 4950

Type/Grade (Lead): 35:65 Poz:H

Additives (Lead):

Additives Code	Conc.	Function
D020	6.000 %BWOB	Extender
D046	0.200 %BWOB	Antifoam
D167	0.400 %BWOB	Fluid loss
D153	0.300 %BWOB	Antisettling
D079	0.175 %BWOB	Extender

Quantity (Lead) (sk): 725.18

Circulated: Yes

Thermal Conductivity (BTU/ft-hr-°F): 0.75

Depth Interval (feet): 4950- 7272

Type/Grade (Tail): EverCRETE

Additives (Tail):

Additives Code	Conc.	Function
D174	10.000 %BWOC	Expanding ce
D206	0.050 gal/sk blend	Antifoam
D145A	0.100 gal/sk blend	Dispersant
D500	0.400 gal/sk blend	GASBLOK LT
D177	0.020 gal/sk blend	Retarder

Quantity (Tail) (sk): 800.71

Circulated: Yes

Thermal Conductivity (BTU/ft-hr-°F): 0.75

5. *Other casing*

N/A

XII. *Surface Facilities, see instructions*

Verification Well #1 will not be used for injection and therefore there are no surface facilities or injection-related equipment affiliated with this well.

A. *Filters(s)*

N/A

B. *Injection pump(s)*

N/A

XIII. *Hydrogeologic Information*

A. *Revised UIC Form 4a*

Revised UIC Form 4a can be referenced in the Completion Report filed for the injection well CCS #1 (Frommelt, 2010).

B. *Revised UIC Form 4d using actual data on injection formation*

Revised UIC Form 4d can be referenced in the Completion Report filed for the injection well CCS #1 (Frommelt, 2010).

C. *Revised UIC Form 4g*

Please see Revised UIC Form 4g included as Appendix XIII.C.

D. *Copy of well completion report submitted to the Department of Natural Resources (Formerly Mines and Minerals)*

Please see attached copy of well completion report submitted to the DNR included as Appendix XIII.D.

E. *Copy of any plugging affidavits on injection well filed with Department of Natural Resources*

N/A

XIV. *Injection Fluid Compatibility, see instructions*

The verification well will not inject CO₂ however it is anticipated that it will come in contact with CO₂ from the nearby injection well.

A. *Compatibility with injection zones fluid*

Please refer to the discussion included in the Completion Report for the injection well CCS #1 (Frommelt, 2010).

B. *Compatibility with minerals in the injection zone*

Please refer to the discussion included in the Completion Report for the injection well CCS #1 (Frommelt, 2010).

C. *Compatibility with minerals in confining zone*

Please refer to the discussion included in the Completion Report for the injection well CCS #1 (Frommelt, 2010).

D. *Compatibility with injection well components*

1. *Injection tubing*

The Verification Well #1 is not intended for either injection or production; however, it has been designed with stainless steel components that are resistant to corrosion from exposure to CO₂-brine mixtures. The only place the Westbay tubing may come in contact with the CO₂ is at the perforated intervals and there are no compatibility issues expected.

2. *Long string casing*

As per the design specifications approved under the UIC Permit No. UIC-012-ADM, a portion of the long string casing installed from total depth of the well past the base of the confining layer (to a depth of 5056') is composed of chrome steel (13CR85) and is specifically engineered to function in environments with high concentrations of CO₂. The long string casing in the remainder of the well (5056' to surface) is carbon steel. Reactivity between the injected CO₂ and the long string casing is expected to be negligible.

3. *Cement*

As specified under UIC Permit No. UIC-012-ADM, the long string casing is encased from total depth to approximately 4950 feet (or approximately 370 feet into the intermediate casing string) in Schlumberger's proprietary blend of CO₂-resistant cement, EverCRETE. Technical descriptions of the cement properties can be found in the original permit application (Chapter 9: UIC Form 4f, Section V, pages 135-139) and accompanying appendices. Reactivity between the injected CO₂ and the cement is expected to be negligible.

4. *Annular fluid*

The annular fluid between the injection tubing and the long string casing above the shallowest Westbay packer is a 9.4 lb/gal sodium chloride brine with Nalco Adomite ASP 539D corrosion inhibitor.

Reactivity between the injected CO₂ and the annular fluid is expected to be negligible.

5. *Packer(s)*

The packers installed are a Westbay MP55 are manufactured from 316/316L stainless steel and incorporate a reinforced rubber gland made of Hydrogenated Nitrile Butadiene Rubber (HNBR) and a pressure balanced inflation/deflation valve mounted on a stainless steel mandrel. The Westbay MP55 packers are CO₂ resistant and as a result will not be impacted by the injected CO₂.

6. *Well head equipment*

Due to the isolation provided by the Westbay completion, components of the wellhead equipment will not be in contact with the injected CO₂; therefore, no adverse reactions are expected between the injected CO₂ and any of the wellhead components.

7. *Holding tank(s) and flow lines*

Verification Well #1 is not used for injection and therefore will not possess holding tanks and flow lines for CO₂ injection.

E. *Full description of compatibility of injection fluid with items A-D*

In summary, Verification Well #1 is not used for injection or production and there are no compatibility concerns with the injection zone, minerals in the injection zone, and minerals in the confining zone. The CO₂ is expected to have negligible to no reaction with the minerals and formation water. Any reactions that may occur are not expected to affect the containment of the CO₂ below the primary seal. In addition, the materials from which the Westbay completion system is constructed are fit-for-purpose and designed to be resistant to adverse reactions with CO₂ and CO₂-brine mixtures.

XV. *Monitoring Program, see instructions*

Details of the various process monitoring sensors and gauges are summarized below and include the location of the device, the brand and model number, the device type (electrical or mechanical), and whether or not the device is continuously recording.

A. *Pressure Monitoring gauge(s)*

Surface Pressure Gauge: Monitoring tag name to be determined (PIT-XX)
Location: Installed directly into the Verification Well #1 wellhead tree cap port.
Make / Model: ABB Model 266GSH-U
Type: Electrical; Continuous Recording

Operating Range (psig): 0 – 435; this exceeds maximum operating range of system by more than 20%

Downhole Pressure Gauges: Westbay MOSDAX System

Pressure/Temperature Probe Model 2580

Location: There are a total of 11 measuring ports and 1 QA/QC port in the well as displayed below in Table 4.

Table 4: Measurement Port Depths

Measurement Port	Depth	Measurement Port	Depth
1	7060.6	7	6415.6
2	6982.4	8	5839.8
3	6945.0	9	5653.3
4	6837.3	QA/QC	5482.0
5	6719.7	10	5001.1
6	6631.7	11	4917.0

Make / Model: Westbay MOSDAX System Pressure/Temperature Probe Model 2580

Type: Electrical; Continuous Recording

Operating Range (psig): 0 – 5,000; this exceeds maximum operating range of the system by more than 20%

B. Casing-tubing annular pressure gauge(s)

For additional details on the Annulus Protection System, refer to the description included as Appendix IX.A.

Surface Pressure Gauge: Monitoring tag name to be determined (PIT-XX)

Location: Mounted on the Verification Well #1 wellhead port open to the casing-tubing annulus.

Make / Model: ABB Model 266GSH-U

Type: Electrical; Continuous Recording

Operating Range (psig): 0 – 435; this exceeds maximum operating range of system by more than 20%

C. Flow meter(s)

N/A

D. pH recording device(s)

N/A

E. Temperature

Downhole Temperature Gauges: Westbay MOSDAX System

Pressure/Temperature Probe Model 2580

Location: There are a total of 11 measuring ports and 1 QA/QC port in the well as displayed above in Table 4.

Make / Model: Westbay MOSDAX System Pressure/Temperature Probe Model 2580

Type: Electrical; Continuous Recording

Operating Range (degF): 32 to 158; this exceeds maximum operating range of system by more than 20%

Sources:

Frommelt, D. (2010). Letter to the Illinois Environmental Protection Agency, Subject: CCS Well #1 Completion Report, – UIC Permit UIC-012-ADM. Archer Daniels Midland Company



Archer Daniels Midland Company
4666 Faries Parkway
Decatur, IL 62526
T 217.424.5200

April 5, 2010

Mr. Steve Nightingale
Illinois Environmental Protection Agency
Bureau of Land, Permit Section #33
1021 N. Grand Ave. East
P.O. Box 19276
Springfield, Illinois 62794-9276

Via Next Day Service

Re: Permit No. UIC-012-ADM
Geophone Well Completion Report

Dear Mr. Nightingale:

In accordance with Condition A.8.b of the above referenced permit, ADM is submitting the Well Completion Report for the geophysical monitoring well drilled at the ADM CCS #1 site. This well will be used for seismic monitoring on the Illinois Basin – Decatur project. This monitoring well will facilitate the gathering of micro-seismic and VSP data over the life of the project.

This well is for monitoring only and does not serve as an injection well. The enclosed report addresses the items required by the permit. If you have any questions regarding this please contact Sallie Greenberg at 217-244-4068 or myself at 217-451-6330.

Sincerely,

A handwritten signature in blue ink, appearing to read "Dean Frommelt", is written over a horizontal line.

Dean Frommelt
Division Environmental Manager
Corn Processing & BioProducts

Cc: Mark Burau - ADM
Mark Carroll – ADM
Rob Finley – ISGS
Sallie Greenberg – ISGS

Geophone Monitoring Well Completion Report

Archer Daniels Midland Company
1150155136 – Macon County
ILD984791459
Permit No. UIC-012-ADM
Log No. UIC-143-M-1

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Attachment 2: Well Tally Data Sheets
Attachment 3: Cement Reports
Attachment 4: Drilling Logs
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 Neutron/Litho Density/Gamma Ray/ Caliper/ Directional Survey
Attachment 6: CBL VDL/ Cement Map /Pressure Temperature/Gamma Ray/ CCL
Attachment 7: IDNR Forms

Report Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Mark Burau, Decatur Corn Plant Manager
Name & Official Title


Signature

217-424-5750
Phone Number

April 5, 2009
Date Signed

Well Location

A photo of the well head showing the 9 5/8 x 3.5 2000 psi SO casing head with 3 ½ tubing is provided as Figure 1. A map showing well pad with respect to the facility boundaries is provided as Figure 2. Also, a map identifying the location of the geophone monitoring well, the injection well, and other appropriate structures is provided as Figure 3.

Additional location information follows:

Township-Range-Section: 390 feet(118.87m) south and 185 feet (56.39m) west of the NE corner of the NW corner of the NW corner of Sec 5, T16N,R3E; Macon County, Illinois

Local Latitude: 39.87704081

Local Longitude: -88.89395539

Surface Elevation: 675ft (205.74m) KB 15 (4.57m) ft above GL

Well Depth: 3500ft (1066.8m)



Figure 1: ADM Geophysical Well Head #1

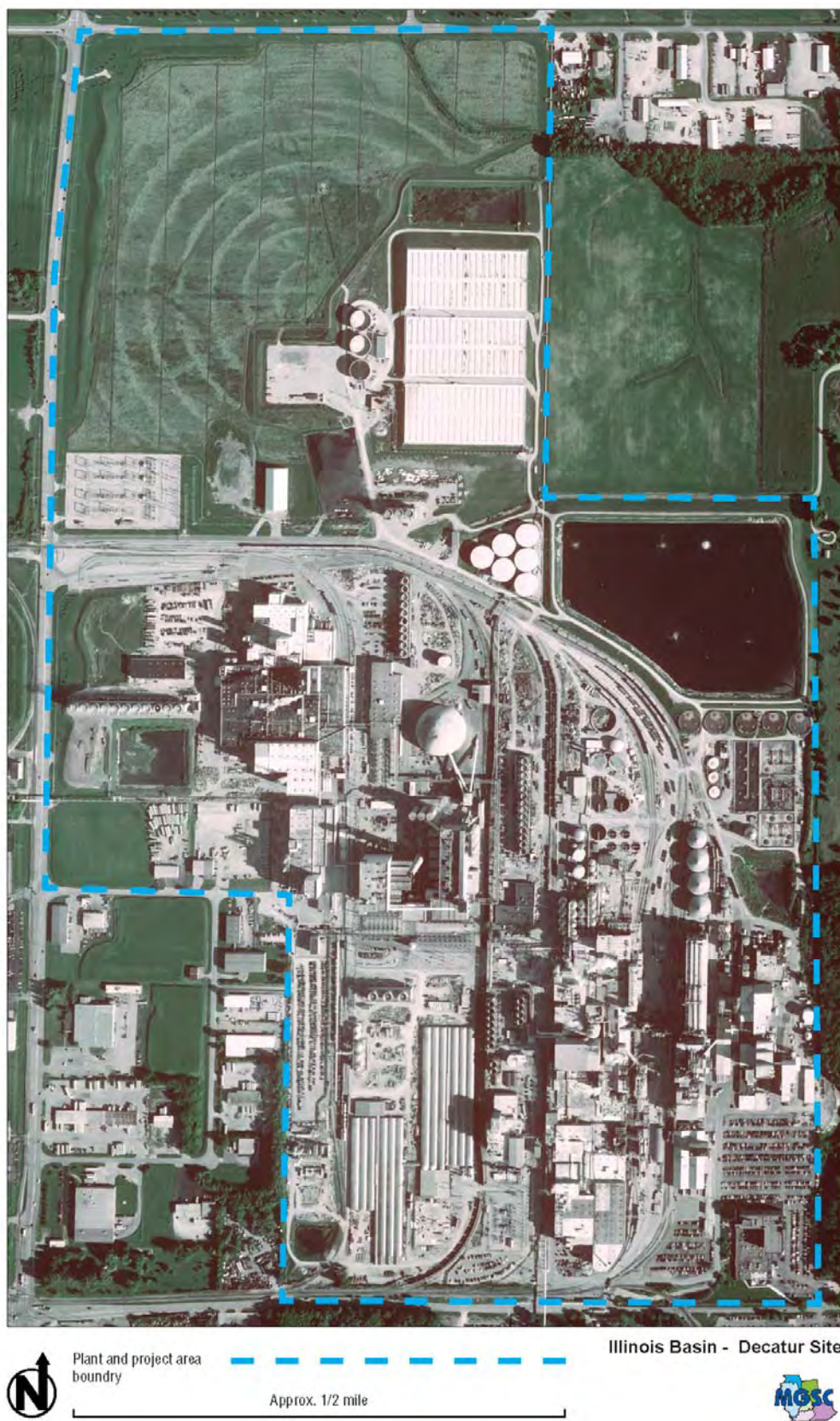


Figure 2: Map depicting facility boundaries

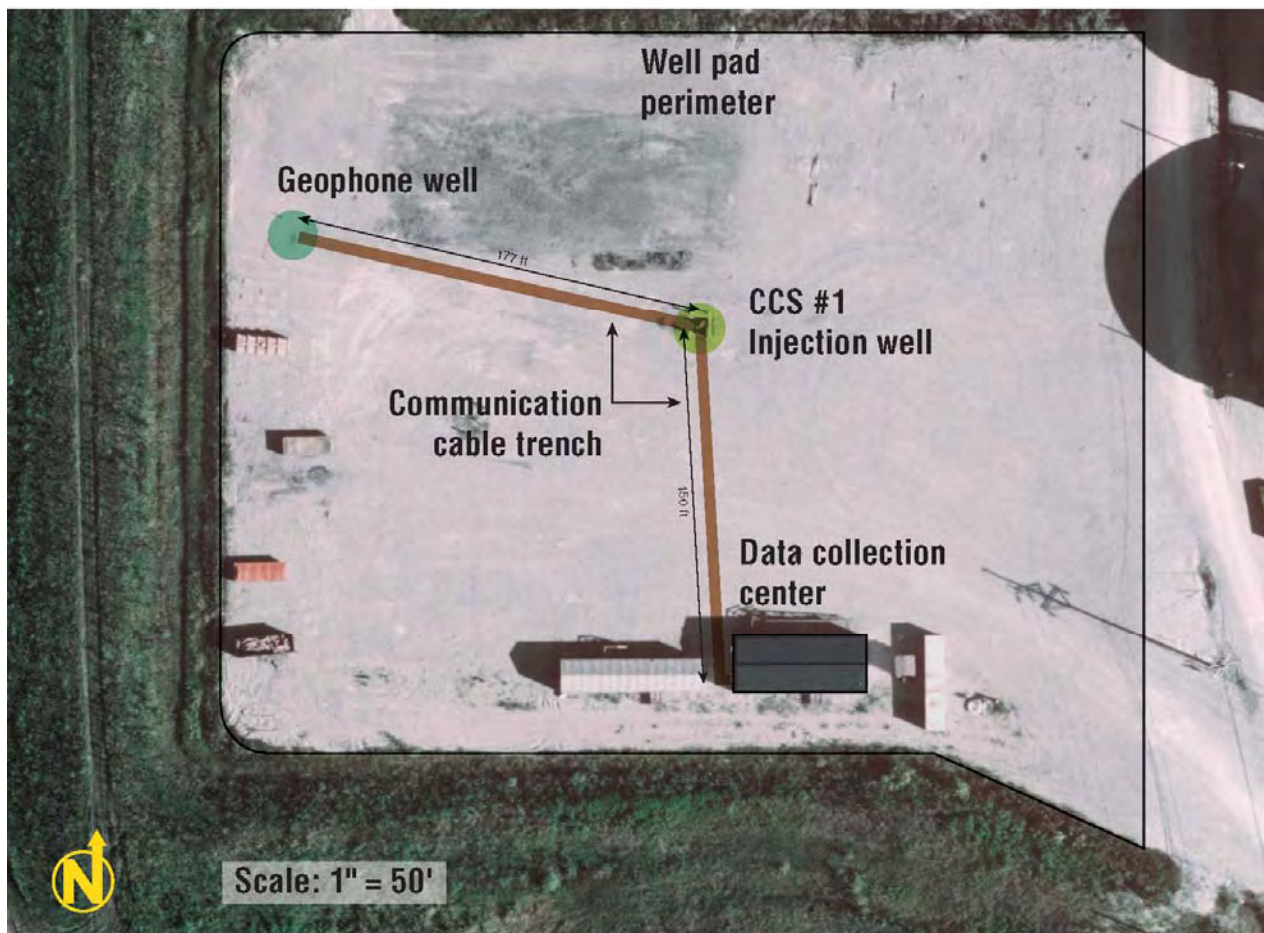


Figure 3: Map showing well pad detail

Description of Construction

Summary

Drilling operations on this well were started on Oct. 29, 2009 and finished on November 11, 2009. The well was drilled using Pioneer Drilling Rig # 15 and was rotary mud drilled.

The well driller used for construction of this well is:

Pioneer Drilling Rig 15
 Rt 4, Box 142 B
 Lawrenceville, IL 62439

Surface casing was set to 350 ft and cemented back to surface. An 8.5 inch hole was drilled to 3500 ft into the top of the Shakopee shale. No cores or DSTs were taken but a suite of open hole logs were run. A 31 level geophone array was installed in the well via a string of 3 ½ inch tubing. The geophone array attached to the outside of the 3 ½ inch pipe was then cemented in place with cement returned to surface. Operations were suspended until all necessary trenching and cabling could be installed and connected to a data acquisition system on site. In early February a cement bond log was run showing excellent cement to surface. The array was tested and found

to be working well. Testing continued until mid February and system was permanently connected to data acquisition system. The array was then used in obtaining VSP data at the well site. The system is continuously recording seismic events at the present.

Well Design and Construction Details

A detailed well drawing of surface and subsurface construction is included in Attachment 1.

- ❖ Well hole diameters and corresponding depth intervals:
 - 12 ¼" (311mm) hole to 351 (106.98m)ft
 - 8.5" (216mm) hole to 3500ft (1066.8m)
- ❖ Casings
 - Conductive casing: None
 - Surface casing: 9 5/8" (244mm) 40#/ft (59.53 kg/m) N-80 LT&C to 349 ft (106.37m) Thermal conductivity 29.02 BTU ft-hr degrees F
 - Intermediate casing: None
 - Long string casing: 3 ½ inch OD (89mm) 2.992 inch ID (76mm) 9.3 #/ft (13.83 kg/m) EUE 8 rd L-80 tubing run as casing to 3496 ft (1065.6m) to support the geophone array Thermal conductivity : 29.02 BTU ft-hr degrees F
 - Other casing: None
- ❖ Cement
 - Conductive casing: None
 - Surface casing: Cemented with 150 sack Class A cement with 2% CaCl₂ and ¼#/sk flake. Mix wt 15.8 ppg, Yield 1.19 ft³/sk. Thermal Conductivity .73 BTU, ft-hr F Lost circulation with two bbls displacement left. Picked up 1" grout string and found cement 13 feet below surface. Mixed and pumped 50 more sacks of same cement and got cement to surface. Total 200 sacks cement used. Displaced with fresh water. Floats held.
 - Intermediate casing: None
 - Long string casing: Ran 920 sacks Franklin 10/10 FSS cement with .2% C-13 retarder and 1/8#/sk flake. Mixed at 14.2 ppg and yield of 1.63 ft³/sk. Thermal Conductivity .6 BTU ft-hr F. Displaced with fresh water. Circulated 30 bbls cement to pit. Floats held
 - Other casing: None

The following attachment provides additional details regarding the construction and design of the well:

- Attachment 1: Well Schematic
- Attachment 2: Well Tally Data Sheets
- Attachment 3: Cement Reports

Tests and Logs

The following tests and logs were completed for this well.

- During Drilling: Drilling Log, Laterlog/SP/Micro Resistivity/Gamma Ray, Compensated Neutron/Litho Density/Gamma Ray/ Caliper/ Directional Survey
- During and after casing installation: CBL VDL/ Cement Map /Pressure Temperature/Gamma Ray/ CCL

The following attachments provide additional details regarding the testing and logging completed:

Attachment 4: Drilling Logs

Attachment 5: Drilling Log, Laterlog/SP/Micro Resistivity/Gamma Ray, Compensated Neutron/Litho Density/Gamma Ray/ Caliper/ Directional Survey

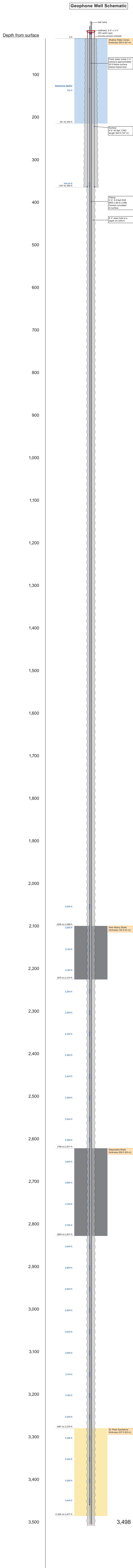
Attachment 6: CBL VDL/ Cement Map /Pressure Temperature/Gamma Ray/ CCL

DNR Well Forms

Forms OG-5 Well Drilling Report and OG-9 Well Completion Report have been submitted to the Illinois Department of Natural Resources – Office of Mines and Minerals. Copies of these forms are contained in Attachment 7.

Attachment 1: Well Schematic

Figure 1



Attachment 2: Well Data Sheets

Jt #	Jt. Tally	Depth	Pod #	Pod Depth	Clamp	Date/Time	Notes
11/5/09 1:00 PM							
Shoe	1.25	3496.00					
Collar	1.17						
		3493.58					
1	31.37						
		3462.21			MC/CC	11/05/2009 14:00	Modified 1st Clamp
2	33.02		31	3443.21	GC		
		3429.19		FALSE			
3	30.47				MC		
		3398.72					
4	31.33		30	3393.21	GC/MC		
		3367.39		FALSE	CC/MC		
5	29.50		29	3343.21	GC		
		3337.89		FALSE	CC		
6	31.53			10' Re-Bar	MC	11/05/2009 15:00	3.5" above tubing collar
		3306.36		10' Re-Bar		11/05/2009 16:00	12" below tubing collar
7	30.69		28	3293.21	GC/MC		
		3275.67		FALSE			
8	30.15				MC		
		3245.52					
9	32.40		27	3243.21	GC/MC(2)		Backup tongs released
		3213.12		FALSE	CC		(KB turned 1/4 rot.)
10	31.21		26	3193.21	GC		
		3181.91		FALSE	CC	11/05/2009 17:15	Fill Tubing
11	33.05				MC		
		3148.86			CC		
12	31.52		25	3143.21	GC/MC		
		3117.34		FALSE			
13	32.84		24	3093.21	MC/GC		
		3084.50		FALSE			
14	32.81				MC		
		3051.69					
15	30.42		23	3043.21	GC		
		3021.27		FALSE	CC		
16	31.39		22	2993.21	GC		
		2989.88		FALSE			
17	32.95				MC		
		2956.93					
18	31.44		21	2943.21	GC		
		2925.49		FALSE	CC		
19	4.25						
		2921.24					
20	30.51		20	2893.21	MC/GC		
		2890.73		FALSE			
21	32.91				MC		
		2857.82					
22	32.98		19	2843.21	GC		
		2824.84		FALSE			
23	6.04						
		2818.80			CC		
24	31.38		18	2793.21	MC/GC		
		2787.42		FALSE			
25	31.40				MC		
		2756.02			CC		
26	33.00		17	2743.21	GC		
		2723.02		FALSE	CC		
27	32.99		16	2693.21	MC/GC		
		2690.03		FALSE		11/05/2009 19:36	

Jt #	Jt. Tally	Depth	Pod #	Pod Depth	Clamp	Date/Time	Notes
		2690.03					
28	31.52				MC		
		2658.51			CC		
29	31.47		15	2643.21	GC		
		2627.04		FALSE			
30	31.37				MC		
		2595.67			CC		
31	31.52		14	2593.21	GC/MC		Tight Connection
		2564.15		FALSE	CC		
32	33.03		13	2543.21	GC/MC		
		2531.12		FALSE			
33	31.37				MC		
		2499.75					
34	30.99		12	2493.21	GC		
		2468.76		FALSE	CC		
35	33.01		11	2443.21	MC/GC		
		2435.75		FALSE			
36	30.46				MC		
		2405.29					
37	31.42		10	2393.21	GC		
		2373.87		FALSE		11/05/2009 20:30	Break to fill tubing
38	30.48		9	2345.21	GC	11/05/2009 21:00	Start-up again
		2343.39		FALSE			Jt. #38: cable wound
39	29.65				GC		around tubing to put
		2313.74			CC		Geo. #9 below collar
40	30.5		8	2295.21	MC		(48' spacing)
		2283.24		FALSE			
41	32.89				MC		
		2250.35					
42	31.41		7	2245.21	GC/MC		
		2218.94		FALSE	CC		
43	32.8		6	2195.21	MC/GC		
		2186.14		FALSE			
44	31.33				MC		
		2154.81					
45	32.64		5	2145.21	GC/MC		
		2122.17		FALSE	CC		
46	30.26		4	2095.21	MC/GC		
		2091.91		FALSE	CC		
47	31.35				MC		
		2060.56			CC		
48	31.55		3	2045.21	GC	11/05/2009 22:05	Attach Geo #3
		2029.01		FALSE			
49	33.06				MC		
		1995.95			CC		
50	31.39				MC	11/05/2009 22:16	Start cable pattern
		1964.56					
51	33				MC		
		1931.56			CC		
52	31.46				MC		
		1900.10					

Jt #	Jt. Tally	Depth	Pod #	Pod Depth	Clamp	Date/Time	Notes
		1900.10					
53	32.92				MC		
		1867.18			CC		
54	33.02				MC		
		1834.16					
55	30.48				MC		
		1803.68			CC		
56	31.18				MC		
		1772.50					
57	30.48				MC		
		1742.02			CC		
58	31.59				MC		
		1710.43					
59	33.04				MC		
		1677.39			CC		
60	32.75				MC		
		1644.64					
61	31.36				MC	11/05/2009 23:30	Break to fill tubing
		1613.28			CC		
62	31.35				MC	11/6/09 0:00	Start-up again
		1581.93					
63	32.87				MC		
		1549.06			CC		
64	32.83				MC		
		1516.23					
65	32.96				MC		
		1483.27			CC		
66	31.44				MC		
		1451.83					
67	31.32				MC		
		1420.51			CC		
68	31.4				MC		
		1389.11					
69	30.69				MC		
		1358.42			CC		
70	32.95				MC		
		1325.47					
71	32.91				MC		
		1292.56			CC		
72	33.1				MC		
		1259.46					
73	32.63				MC		
		1226.83			CC		
74	31.54				MC		
		1195.29					
75	32.56				MC		
		1162.73			CC		
76	32.84				MC		
		1129.89					
77	32.44				MC		
		1097.45			CC		

Jt #	Jt. Tally	Depth	Pod #	Pod Depth	Clamp	Date/Time	Notes
		1097.45			CC		
78	30.69				MC		
		1066.76					
79	31.5				MC		
		1035.26			CC		
80	30.47				MC		
		1004.79					
81	30.49				MC		
		974.30			CC		
82	32.92				MC		
		941.38					
83	32.96				MC		
		908.42			CC		
84	31.5				MC		
		876.92					
85	31.36				MC		
		845.56			CC		
86	32.86				MC		
		812.70					
87	31.48				MC		
		781.22			CC		
88	30.61				MC		
		750.61					
89	32.62				MC		
		717.99			CC		
90	33.05				MC		
		684.94					
91	31.51				MC		
		653.43			CC		
92	33.13				MC		
		620.30					
93	33.04				MC		
		587.26			CC		
94	31.48				MC		
		555.78					
95	31.44				MC		
		524.34			CC		
96	31.36				MC		
		492.98					
97	32.94				MC		
		460.04			CC		
98	30.52				MC		
		429.52					
99	32.68				MC		
		396.84			CC		
100	30.28				MC		
		366.56					
101	32.98		2	355.21	GC		
		333.58		FALSE	CC		
102	30.7				MC		
		302.88					

Jt #	Jt. Tally	Depth	Pod #	Pod Depth	Clamp	Date/Time	Notes
		302.88					
103	31.64				MC		
		271.24					
104	31.49				MC		
		239.75			CC		
105	33.05				MC		
		206.70					
106	32.9				MC		
		173.80					
107	31.14				MC		
		142.66			CC		
108	31.5		1	135.21	GC		
		111.16		FALSE			
109	33				MC		
		78.16			CC		
110	32.93				MC		
		45.23			CC		
111	31.44				MC		
		13.79			CC		
P2	4.13						
		9.66					
P3	6.08						
		3.58					

GC = Geophone Clamp
 MC = Mid-joint Clamp
 CC = Centralizing Clamp
 Red = Pup Joint
 Blue = Re-bar

Attachment 3: Cement Reports

CEMENTING SERVICE REPORT

Franklin Well
Services, Inc.

TREATMENT NUMBER	DATE
01-10701	10/29/8
STAGE	DISTRICT
	L-ville

WELL NAME AND NO. GeoPhone # CCS-1		LOCATION (LEGAL)		RIG NAME: POFs Rig #15	
FIELD POOL		FORMATION SURFACE		WELL DATA:	
COUNTY/PARISH MACON		STATE IL		API. NO.	
NAME Pioneer Oilfield Services		AND ADM		ADDRESS	
SPECIAL INSTRUCTIONS Cement 95/8 Surface Pipe Per Customer Request		ZIP CODE		NOTE: Include Footage From Ground Level To Head In Disp. Capacity	
IS CASING/TUBING SECURED? <input type="checkbox"/> YES <input type="checkbox"/> NO		LIFT PRESSURE		CASING WEIGHT + SURFACE AREA (3.14 x R ²)	
PRESSURE LIMIT		PSI		BUMP PLUG TO	
ROTATE		RPM		RECIPROCAT	
		FT		No. of Centralizers	

TIME	PRESSURE		VOLUME PUMPED gal.		JOB SCHEDULED FOR			ARRIVE ON LOCATION		LEFT LOCATION	
	TBG OR D.P.	CASING	INCREMENT	CUM.	INJECT RATE	FLUID TYPE	FLUID DENSITY	TIME	DATE	TIME	DATE
0001 to 2400											
2302								PRE-JOB SAFETY MEETING			
2307		75	13		2.5	H2O	8.3	BREAK CIRCULATION H2O AHEAD			
2310		100	10		3.0	H2O		ST. FLAKE			
2316		100	23		3.5	H2O	8.3	ST. H2O SPACER			
2324		300	30.5		4.0	cem	15.6	ST. Cement			
2325	-	-	-		-	-	-	SHUT DOWN DROP PLUG			
2333		100	228		3 1/2	H2O	8.3	ST. Displacement			
2334		500						Bump Plug			
2335		100						Check Float			
2336		400				H2O	8.3	Re Bump Plug			
2337								Bump Plug			
1212								Float Held Rig UP 1" tub FOR			
1223			10		1.0	cem	15.6	BACKSIDE			
								ST. Cement			
								SHUT DOWN			

REMARKS ON LOC. @ 1630 CASING NOT ON LOC.

SYSTEM CODE	NO. OF SACKS	YIELD CU. FT/SK	COMPOSITION OF CEMENTING SYSTEMS		SLURRY MIXED	
					BBLS	DENSITY
1.	145	1.18	CLASS 'A' + 20% C-1 + 1/8" # C-30		30.5	15.6
2.						
3.	50	1.18	CLASS 'A' + 20% C-1 + 1/8" # FLAKE (Back Side)		10	15.6
4.						
5.						
6.						

BREAKDOWN FLUID TYPE		VOLUME		DENSITY		PRESSURE		MAX.		MIN.	
<input type="checkbox"/> HESITATION SQ.		<input type="checkbox"/> RUNNING AC		<input type="checkbox"/> CIRCULATION LOST		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Cement Circulated To Surf.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
BREAKDOWN		PSI		FINAL		PSI		DISPLACEMENT VOL.		228 Bbls	
Washed Thru Perfs		<input type="checkbox"/> YES <input type="checkbox"/> NO		TO		FT.		MEASURED DISPLACEMENT		TANKS	
PERFORATIONS		TO		TO		TO		TO		TO	
CUSTOMER REPRESENTATIVE						SUPERVISOR					
Jim Kirksey						Rt. Stoltz					

CEMENTING SERVICE REPORT

Franklin Well
Services, Inc.

TREATMENT NUMBER	11951	DATE	11-6-09
STAGE	DISTRICT X. Villo		

WELL NAME AND NO. GEOPHONE # CCS-1		LOCATION (LEGAL)		RIG NAME: PIONEER RIG #15	
FIELD POOL ADM		FORMATION 3 1/2" LONG STRING		WELL DATA: BOTTOM TOP	
COUNTY/PARISH MACON		STATE ILLINOIS		API. NO.	
NAME PIONEER OILFIELD SERVICES		AND		ADDRESS	
SPECIAL INSTRUCTIONS 3 1/2" LONG STRING		ZIP CODE		NOTE: Include Footage From Ground Level To Head In Disp. Capacity	
IS CASING/TUBING SECURED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		LIFT PRESSURE 3385 PSI		CASING WEIGHT + SURFACE AREA (8.14 x 10)	
PRESSURE LIMIT PSI		BUMP PLUG TO 1800 PSI		ROTATE RPM RECIPROCATATE FT No. of Centralizers	
HEAD & PLUGS <input type="checkbox"/> Double <input checked="" type="checkbox"/> Single <input type="checkbox"/> Swage <input checked="" type="checkbox"/> Knockoff		SIZE WEIGHT GRADE THREAD		TOOL TYPE DEPTH	
TOP <input checked="" type="checkbox"/> NEW <input type="checkbox"/> USED		BOT <input type="checkbox"/> OR <input type="checkbox"/> DW		DEPTH	
SQUEEZE JOB TAPE PIPE: SIZE DEPTH		TUBING VOLUME CASING VOL. BELOW TOOL		TOTAL ANNUAL VOLUME	

TIME	PRESSURE	VOLUME PUMPED bbl	JOB SCHEDULED FOR TIME: 0300 DATE: 11-11	ARRIVE ON LOCATION TIME: 0300 DATE: 11-11	LEFT LOCATION TIME: 1030 DATE: 11-11
0001 to 2400	TBG OR D.P.	CASING	INJECT RATE	FLUID TYPE	FLUID DENSITY
0805	-	2000	-	-	-
0810	-	650	-	-	-
0821	-	700	50	5	14.2
0825	-	700	20	5	14.2
0849	-	600	50	5	14.2
0933	-	700	266	386	14.2
0934	-	950	-	386	14.2
0940	-	1350	30	116	2
PRE-JOB SAFETY MEETING YRS - PRESSURE TEST					
START PUMPING WATER, BREAK CIRC.					
START PUMPING MUD FLUSH					
START PUMPING WATER					
START 10/10 FSS CEMENT					
CEMENT IN, WASH LINES, DROP PLUG					
START PUMPING DISPLACEMENT					
BUMP PLUG TO 1800 PSI					
BLEED PRESSURE, CHECK SHOE					
SHOE HOLDING OK					
30- BBL. CEMENT TO PIT = 105- SKS.					
RIG DOWN LEAVE LOC.					

REMARKS

SYSTEM CODE	NO. OF SACKS	YIELD CU. FT/SK	COMPOSITION OF CEMENTING SYSTEMS	SLURRY MIXED BBLs	DENSITY
1.	920	663	10/10 FSS + 0.3% C-65 + 0.2% C-13 + 1/2" FLAKE	266	14.2
2.					
3.					
4.					
5.					
6.					

BREAKDOWN FLUID TYPE		VOLUME		DENSITY	PRESSURE	MAX. 1350	MIN. 600
<input type="checkbox"/> HESITATION SQ.		<input type="checkbox"/> RUNNING SQ.		CIRCULATION LOST	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
BREAKDOWN		PSI	FINAL	PSI	DISPLACEMENT VOL.	30	Bbls
Washed Thru Parts		<input type="checkbox"/> YES <input type="checkbox"/> NO	TO	FT.	MEASURED DISPLACEMENT	<input type="checkbox"/> WIRELINE	<input type="checkbox"/> OIL <input type="checkbox"/> GAS <input type="checkbox"/> STORAGE <input type="checkbox"/> INJECTION <input type="checkbox"/> BRINE WATER <input type="checkbox"/> WILDCAT
PERFORMANCES		TO	TO	CUSTOMER REPRESENTATIVE	SUPERVISOR		
				Jim Kirksey	J. M. Moore		

Attachment 4: Drilling Logs

PIONEER OIL FIELD DRILLING-TIME LOG OF WELL

Company ADM Geophysical Well # 1 Farm No

Contractor <u>PIONEER</u>			Sec			N. S. R. E. W.			Co.
Sec	T.	S.	R.	E.	W.	LOG, REMARKS, STOP			
DEPTH	TIME	MINUTES	LOG, REMARKS, STOP			DEPTH	TIME	MINUTES	LOG, REMARKS, STOP
50	5:00					30	11:59	15	
55	05	5				35	12:02	3	
60						40	07	5	
65						45	12	5	
70						50	15	3	
75	6:23 33	10				55	22	7	
80	43	10				60	26	4	CONN
85	53	10				65	36 45	9	
90	7:03	10				70	54	9	
95	13	10				75	1:01	7	
100	23	10				80	18	17	
05	33	10				85	35	17	
10	43	10				90	52	17	CONN 291
15	53	10				95	2:12	20	
20	8:03	10				300	20	8	
25	13	10				05	27	7	
30	8:23	10				10	35	8	
35	33 49	16	Circ to fix weight Indicator			15	43	8	
40	59	10				20	2:53	10	CONN 322
45	9:04	5				25	3:01 3:12	11	
50	14	10				30	3:19	7	
55	29	15				35	3:25	6	
60	47	18	Lime			40	3:35	10	
65	9:58 10:08	10	Calibrate Pason			45	3:46	11	
70	17	7				50	4:00	14	T.D
75	23	6				55	7:10 7:21	14	
80	32	9				60	7:36	12	
85	49	17	Lime			65	7:41	5	
90	53	4				70	7:47	6	
95	57	4	CONN 197			75	7:57	10	
200	11:09 12					80	8:07	10	CONN 382
05	15	6				85	8:23 8:29	7	
10	21	6				90	8:31	2	
15	26	5				95	8:33	2	
20	35	9				400	8:39	6	
25	44	9	CONN 228			405	8:43	9	

Speed of Rotary Table

Points weight

Weight

Viscosity

Speed of Rotary Table

Points weight

TABCO/Kramac Division-Vincennes, Fort

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

Company

A D M

Farm

monITOR

No.

#1

Elev.	TIME	Contractor	LOG, REMARKS, STOP	Sec	N.	S.	R.	E.	W.	Co.
DEPTH	TIME	MINUTES	LOG, REMARKS, STOP	DEPTH	TIME	MINUTES	LOG, REMARKS, STOP	DEPTH	TIME	MINUTES
410	8:43 8:48	5	CONN 413	90	24	4				
15	9:00 9:04	4		95	29	5				
20	9:08	4		600	33	4	CONN 603			
25	9:12	4		105	1:38 1:47	13				
30	9:17	5		10	52	5				
35	9:22	5		15	57	5				
40	9:27	5		20	2:03	6				
45	9:31	4	CONN 445	25	07	4				
450	10:00 10:08	8	Tighten Kelly Hose	30	12	5	CONN 634			
55	10:13	5		35	2:13 2:20	4				
60	10:19	6		40	26	6				
65	10:24	5		45	32	5				
70	10:34	10	Line	650	36	4				
75	10:43	9	CONN 475	55	40	4				
80	10:50 56	6		60	46	6	CONN 665			
85	11:00	4		65	2:51 3:03					
90	05	5		70	08	5				
95	10	5		75	14	6				
500	15	5		80	21	7				
05	20	5	CONN 507	85	28	7				
10	11:24 46	5	PUT OIL I ROTARY TABLE	90	35	7	CONN 696			
15	51	5		95	3:42 3:49	7				
20	55	4		700	54	5				
25	12:00	5		05	58	4				
30	05	5		10	4:03	5				
35	11	6	CONN 540	15	10	7				
40	12:11 27	5		20	16	6	CONN 726			
45	31	4		25	4:23 4:31	6				
550	36	5		30	37	4				
55	41	5		35	40	3				
60	46	5		40	44	4				
65	51	5	CONN 571	45	50	6				
70	12:56 1:07	5		750	56	6	CONN 758			
75	1:12	5		55	5:02 5:10	8				
80	15	3		60	13	3				
85	20	5		105	17	4				

Mud weight

Viscosity

Speed of Rotary Table

Points weight

TABCO/Kansas Electric & Mechanical Co.

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

 Company ADM

 Farm MONITOR

 No. 1

Elev.			Contractor	Sec	N. T. S. R. E. W.			Co.
DEPTH	TIME	MINUTES			DEPTH	TIME	MINUTES	
770	22	5			50	48 50	2	
75	28	6			55	55	5	
80	34	6			60	11:00	5	
85	40	6			65	06	6	
90	5:43 52	6	CONN 789		70	12	6	
95	58	6			75	17	5	CONN 977
800	6:02	6			80	31	6	
05	08	6			85	36	5	
10	13	5			90	42	6	
15	18	5			95	47	5	
20	8:23 7:15	5	Straight Hole 1/4		1000	53	6	
25	7:21	6			05	59	6	CONN 1009
30	28	7			10	12:12	6	
35	35	7			15	15	3	
40	42	7			20	18	3	
45	49	7			25	21	3	
50	7:56	7	CONN 852		30	25	4	
55	8:07	7			35	28	3	CONN 1039
60	13	6			40	38	4	
65	19	6			45	41	3	
70	25	6			50	44	3	
75	31	6			55	47	3	
80	38	7	CONN 884		60	50	3	
85	51	7			65	53	3	
90	57	6			70	56	3	CONN 1071
95	9:03	6			75	1:08	6	
900	09	6			80	23	15	Auto Driller
05	15	6			85	27	4	
10	22	7			90	32	5	
15	28 10:05	7	CONN Work on MP		95	37	5	
20	10	5			1100	42	5	Start Mud up
25	15	5			05	53	5	CONN 1103
30	21	6			10	57	4	
35	26	5			15	2:01	4	
40	31	5			20	06	5	
45	37	6	CONN 946		25	11	5	

Viscosity

Speed of Rotary Table

Points weight

TABCO/Kramac Division-Vincennes Form

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

Company ADM Farm MONITOR No 1

Elev.			Contractor	Sec	N. E.			Co.
DEPTH	TIME	MINUTES			T.	S.	R.	
DEPTH	TIME	MINUTES	LOG, REMARKS, STOP	DEPTH	TIME	MINUTES	LOG, REMARKS, STOP	
1130	16	5		10	8:48	6		
35	35	19	CONN 1135	15	8:53	5		
40	41 48	7		20	8:58	5	CONN 1322 STRAIGHT HOLE	
45	2:52	4		25	9:40 9:43	3		
50	2:56	4		30	10:00	17		
55	3:01	5		35	10:22	22		
60	3:06	5		40	50	28		
65	3:10	4	CONN 1165	45	11:00	12		
70	3:22 3:26	4		50	14	12	CONN 1352	
75	3:29	3		55	11:01 11:35	14		
80	3:33	4		60	43	8		
85	3:38	5		65	47	4		
90	3:43	5		70	54	7		
95	3:48	5	CONN 1196	75	12:00	8		
1200	3:50 4:00	4		80	12	10	CONN 1384	
05	4:04	4		85	12:01 12:31	10		
10	4:08	4		90	43	12		
15	4:12	4		95	54	11		
20	4:17	5		1400	1:08	14		
25	4:22	5	CONN 1228	05	16	8		
30	4:30 4:34	4		10	25	9	CONN 1485	
35	4:39	5		15	1:37 2:24		WORK ON KELLY SPINNER	
40	4:43	4		20	2:29	5		
45	4:49	6		25	37	8		
50	4:54	5		30	45	8		
55	4:59	5		35	53	8		
60	5:05	6	CONN 1260	40	3:01	8	CONN 1445	
65	5:12 5:17	5		45	3:10 3:23	9		
70	5:24	7		50	30	8		
75	5:28	4		55	37	7		
80	5:42	14	LIME	60	43	6		
85	6:25	43		65	51	8		
90	7:03	38	CONN 1291 SPARENT	70	58	7	CONN 1475	
95	8:10 8:52	2	STRAIGHT HOLE DOWN	75	9:10 9:21	7		
1300	8:37	5		80	29	8		
05	8:42	5		85	34	5		

Mud weight

Viscosity

Speed of Rotary Table

Points weight

TABCO/KOMAS Drilling Machine

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

 Company ADM

 Farm MONITOR

 No 1

Elev.	TIME	Contractor	LOG, REMARKS, STOP	Sec	T.	N. S.	R.	E. W.	Co.
DEPTH	TIME	MINUTES		DEPTH	TIME	MINUTES			
1490	3:40	6		10	46	5			
95	46	6		75	52	6			
1500	52	6		80	58	6			
05	8:01 13	6		85	12:04	6			
10	20	7		90	11	7			Conn 1692
15	34	14		95	26	7			
20	51	17		1700	31	5			
25	7:03	12		05	35	4			
30	10	7		10	40	5			
35	17	7	Conn 1538	15	45	5			
40	8:30 33	3		20	51	6			Conn 1724
45	38	5		25	1:17	6			Fix Kelly Spinners
50	43	5		30	21	4			
55	48	5		35	26	5			
60	54	6	Plugged Jet	40	32	6			
65	9:00	6	Conn 1568	45	37	5			
70	16	6		50	42	5			
75	24	8		55	49	7			Conn 1760
80	30	6		60	54 2:00	6			
85	35	5		65	05	5			
90	41	6		70	09	4			
95	46	5		75	14	5			
1600	52	6	Conn	80	19	5			Conn 1787
05	10:00 06	6		85	24	5			
10	11	5		90	30	6			
15	17	6		95	37	7			
20	23	1		1800	42	5			
25	29	6		05	2:47	5			
30	35	6	Conn	10	2:52	5			
35	48 54	6		15	2:56	4			Conn 1818
40	11:00	6		20	3:08 3:10	2			
45	07	7		25	3:13	3			
50	13	6		30	3:18	5			
55	18	5		35	3:23	5			
60	24	6	Conn 1661	40	3:30	7			
65	41	7		45	3:38	8			Conn 1848

Mud weight

Viscosity

Speed of Rotary Table

Points weight

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

 Company ADM

 Farm MONITOR

 No. 1

Elev.	Contractor		Sec	N.	E.	S.	R.	W.	Co.
DEPTH	TIME	MINUTES	LOG, REMARKS, STOP		DEPTH	TIME	MINUTES	LOG, REMARKS, STOP	
1850	4:22	2	STRAIGHT HOLE 1/2"		30	09	8	CONN 2035	
55	4:30	6	VF 55 WT 9.3		35	11:17	8		
60	4:40	10			40	11:36	5	53 V/S 9.4 WT	
65	4:49	9			45	12:11		WORK ON LIGHT PLANT	
70	5:02	13			2050	15	4		
75	5:13	11	CONN 1879		55	21	6		
80	5:29	2			60	26	5	CONN 2067	
85	5:36	7			65	12:40	5		
90	5:43	7			70	48	6		
95	5:49	6			75	1:02	14	WORK ON LIGHT PLANT	
1900	5:56	7			80	1:41	39		
05	6:03	7			85	52	11		
10	6:18	12	CONN 1910		90	58	6	CONN 2099	
15	6:29	11			95	2:02	6		
20	6:53	13			2100	26	6	59 V/S 9.4	
25	7:02	9			05	35	9		
30	7:14	12	V/S 60 WT 9.4		10	42	7		
35	7:25	11	CONN 1939		15	52	10		
40	7:48	6			20	3:01	9		
45	7:59	11			25	10	9	CONN 2130	
1950	8:11	12			30	5:31	9		
55	8:25	14			35	38	7		
60	8:40	15			40	42	4		
65	8:53	13			45	46	4		
70	9:09	16	CONN 1970		2150	51	3	56 V/S 9.4	
75	9:16	11			55	56	5	CONN 2060	
80	9:41	14			60	4:01	7		
85	9:50	9			65	21	7		
90	10:04	14	58 V/S WT 9.4		70	26	5		
95	10:16	12			75	31	5		
2000	10:25	9	CONN 2002		80	36	5		
05	10:32	6			85	42	6		
10	43	6			90	48	5		
15	49	6	54 V/S WT 9.4		95	4:51	5		
20	55	6			2200	5:07	10		
25	01	6			05	5:14	7		

Mud Weight

Viscosity

Speed of Rotary Table

Points weight

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

Company ADM

Farm GEOTHERMAL MONITOR

No. 1

Elev.	TIME	MINUTES	LOG, REMARKS, STOP	DEPTH	TIME	MINUTES	LOG, REMARKS, STOP
2210	28	10		90	28	6	
2215	38	8	CONN 2223	95	34	6	
20	5:45 6:00	8		2400	40	6	
25	05	5		05	10:47	7	Conn 2409
30	13	8		10	11:00	7	
35	23	10		15	06	6	
40	34	11		20	15	9	
45	44	10		25	24	9	
50	54	10	Conn 2254	30	33	9	
55	7:04	10		35	43	10	
60	7:11	7		40	53	10	Conn 2441
65	17	6		45	12:10	10	
70	25	8		50	12:21	11	
75	35	10		55	31	10	
80	41	6		60	42	11	
85	49	8	CONN Serv Rig	65	54	12	
90	7:56 8:02	6		70	1:05	11	Conn 2472
95	07	5		75	22	11	
2300	12	5		80	34	12	
05	16	4		85	45	11	
10	21	5		90	56	11	
15	26	5	Conn 2316 Straight	95	2:06	10	
20	9:01	5	3/4 Hole	2500	18	12	Conn 2504
25	05	4		05	2:33 2:38	3	
30	10	5		10	2:47	9	
35	15	5		15	2:58	11	
40	19	4		20	3:10	12	
45	24	5	Conn 2346	25	3:24	14	
50	36	5		30	3:38	14	CONN 2534
55	43	7		35	5:29 5:33	3	
60	50	7		40	5:49	12	
65	9:55	5		45	5:58	14	
70	10:01	6		50	6:12	14	
75	06	5	Conn 2377	55	6:28	16	
80	17	6		60	6:43	15	
85	22	5		65			CONN 2565

Mud weight

Viscosity

Speed of Rotary Table

Points weight

TABCO/Kramac Division

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

Company

ADN

Farm

MONITOR

No.

1

Elev.	TIME	Contractor	LOG, REMARKS, STOP	Sec	T.	N. S.	R.	E. W.	Co.
DEPTH	TIME	MINUTES	LOG, REMARKS, STOP	DEPTH	TIME	MINUTES	LOG, REMARKS, STOP		
2570	7:06 7:15	9		2750	3:44 54	14		CONN 2718	
75	7:24	9		55	24	20		54 VES 9.6 WT	
80	7:32	8		60	40	16			
85	7:50 8:00	10		65	56	16			
90	8:12	12		70	14	18			
95	8:28	16	CONN 2595	75	23	9		SHT	
2600	8:40 8:48	8		80	5:30 8:15	45		5:40 CONN 2779	
05	8:59	11		85	29	14		56 VES 9.6 WT	
10	9:11	12		90	45	16			
15	9:24	13		95	54	9			
20	9:32	8		2800	7:02	8		Amplup 44 Ind.	
25	9:41	9	CONN 2626	05	15	13		CONN 2808	
30	10:18 10:24	6		10	37	13		51 VES 9.6	
35	10:32	8		15	45	8			
40	48	16		20	55	10			
45	59	11		25	8:05	10			
2650	10	11	9.6 WT 55 VES	30	15	10			
55	19	9	CONN 2656	35	23	8		CONN 2839	
60	11:22 26	8	✓ REG	40	38	8			
65	45	9		45	47	9			
70	53	8		2850	56	9			
75	12:02	9		55	9:03	7			
80	12	10		60	12	9		serv Rig Cal Pason	
85	22	10		65	24	12		CONN 2889	
90	12:31 46	15	CONN 2687	70	46	12			
95	56	10		75	55	9			
2700	1:06	10	54 VES 9.6	80	10:05	10			
05	18	12		85	15	10			
10	29	11		90	23	8			
15	42	20	LIME	95	31	8			
20	2:00 2:06	18	CONN 2718	2900	39	8		CONN 2901	
25	40	22	54 VES 9.6	05	53	8			
30	51	11		10	11:01	8			
35	09	18		15	08	7			
40	32	23		20	16	8			
45	40	8		25	24	8			

Mud weight

Viscosity

Speed of Rotary Table

Points weight

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

Company ADM Farm Monitor No. 1

Elev.	Contractor	Sec	N. S.	R.	E. W.	Co.
DEPTH	TIME	MINUTES	LOG, REMARKS, STOP			
30	24 32	8	CONN 2932			
35	49	9				
40	59	10				
45	12:08	9				
50	18	10				
55	28	10				
60	39	11	CONN 2962			
65	57	11				
70	1:05	8				
75	15	10				
80	25	10				
85	36	11				
90	46	10	CONN 2993			
95	2:03	10				
3000	13	10				
05	23	10				
10	34	11				
15	2:42	8				
20	2:53	11				
25	3:04	11	CONN 3025			
30	3:20 3:30	10	OOR			
35	3:46	11				
40	3:50	9				
45	4:02	12				
50	4:18	10	CONN 3054			
55	4:34 4:44	10				
60	4:55	11				
65	5:09	14				
70	5:20	11				
75	5:31	11				
80	5:43	12	CONN 3084			
85	6:00 6:08	8				
90	6:18	10				
95	6:26	8				
3100	6:38	12				
05	6:49	11				
10	7:01	12				
15	7:12	11	CONN 3115			
20	7:22 7:29	7				
25	7:40	11				
30	7:51	11				
35	8:03	12				
40	8:15	12				
45	8:27	12	CONN 3145			
50	8:33 8:43	8				
55	8:54	11				
60	9:04	10				
65	9:13	9				
70	9:22	9				
75	9:32	10	CONN 3177			
80	9:40 9:48	8				
85	9:57	9				
90	10:07	10				
95	10:16	9				
3200	10:25	9				
05	10:32	7	CONN 3208			
10	10:42 10:48	6				
15	50	2				
20	55	5				
25	11:01	6	57 lbs 96 wt			
30	08	7				
35	14	6	CONN 3240			
40	11:20 11:26	6				
45	30	4				
50	35	5				
55	40	5				
60	45	5				
65	50	5	CONN 3271			
70	10:57 11:08	5				
75	11:30	5				
80	1:44	5				
85	1:49	5				

PIONEER OIL FIELD SERVICES, LLC

DRILLING-TIME LOG OF WELL

Company ADM

Farm MONITOR

No 1

Elev.			Contractor	Sec	N. E.			Co.
DEPTH	TIME	MINUTES			T.	S.	R.	
DEPTH	TIME	MINUTES	LOG, REMARKS, STOP	DEPTH	TIME	MINUTES	LOG, REMARKS, STOP	
3290	1:55	5		70	9:06	39		
95	2:00	5		75	28	22		
3300	2:05	5	CONN 3302	80	49	21		
3305	2:11 2:55	44	SHT 3/4	85	10:10	21	CONN 3489	
10	3:05	10		90	32	19		
15	19	9		95	51	19		
20	28	9		3500	11:05	14	Circ 1/2 Short Trip	
25	38	10						
30	48	10	CONN 3334					
35	3:58 4:04	6						
40	09	5						
45	18	9	VIS SS 9.6 W					
50	27	9						
55	34	7						
60	42	8	CONN 3365					
65	4:54 5:00	7						
70	56	8						
75	14	8						
80	22	8						
85	30	8						
90	38	8	CONN 3397					
95	5:53 5:58	7						
3400	01	3						
05	07	6	64 W 9.7 W					
10	14	7						
15	24	10						
20	29	5						
25	39	10	CONN 3427					
30	7:03	12						
35	13	10						
40	21	8						
45	37	16						
50	45	18						
55	53	8	CONN 3458					
60	8:18	10	Serv Rig					
65	27	9						

Mud weight

Viscosity

Speed of Rotary Table

Points weight

TABCO/Kramac Division

Attachment 5: Drilling Log, Laterlog/SP/Micro Resistivity/Gamma Ray, Compensated Neutron/Litho
Density/Gamma Ray/ Caliper/ Directional Survey

Attachment 6: CBL VDL/ Cement Map /Pressure Temperature/Gamma Ray/ CCL

Attachment 7: IDNR Forms



Archer Daniels Midland Company
4666 Faries Parkway
Decatur, IL 62526
T 217.424.5200

Illinois Department of Natural Resources
Office of Mines and Minerals
Division of Oil and Gas
One Natural Resources Way
Springfield, Illinois 62702-1271

Re: Archer Daniels Midland Company – Decatur, IL
Geophone Well Completion Report
IEPA UIC Permit No. UIC-012-ADM
IDNR Forms OG-9 & OG-5

To Whom It May Concern:

Archer Daniels Midland (ADM) submitted the Well Completion Report to IEPA for the geophysical monitoring well drilled at the ADM CCS #1 site. This well will be used for seismic monitoring on the Illinois Basin – Decatur project. This monitoring well will facilitate the gathering of micro-seismic and VSP data over the life of the project. It is for monitoring only and does not serve as an injection well.

One of the items requested for the IEPA's completion report is a copy of the completion forms submitted to IDNR. Based on a recent telephone conversation between Sallie Greenberg, ISGS and Doug Schutt, IDNR, ADM understands that these forms are not required by IDNR since these wells are not regulated by IDNR. However, ADM is submitting the enclosed forms for informational purposes.

If you have any questions regarding this please contact Sallie Greenberg at 217-244-4068 or myself at 217-451-6330.

Sincerely,

Dean Frommelt
Division Environmental Manager
Corn Processing & BioProducts

Cc: Mark Burau - ADM
Mark Carroll – ADM
Rob Finley – ISGS
Sallie Greenberg – ISGS



ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Office of Mines and Minerals

Division of Oil and Gas
(217) 557-6379

One Natural Resources Way
Springfield, Illinois 62702-1271



OG-9 WELL COMPLETION REPORT

TYPE OF REPORT:

☒ NEW WELL ☐ CONVERSION ☐ DOPH ☐ DEEPENING ☐ WORKOVER

TYPE OF WELL:

☐ OIL PRODUCER ☐ GAS PRODUCER ☐ CLASS II INJECTION WELL ☐ WATER SUPPLY
☐ OBSERVATION ☐ GAS STORAGE ☐ D&A ☒ SERVICE

PERMITTEE: Archer Daniels Midland Company PERMITTEE #: _____

WELL NAME: Geophysical Monitoring Well # 1 PERMIT #: _____

LOCATION: 390 ft S, 185 ft W of NE NW NW REFERENCE #: _____

COUNTY: Macon SECTION: 5 TOWNSHIP: 16N RANGE: 3E

DRILLING DATA:

☐ WELL NOT DRILLED, PERMIT EXPIRED ☐ WELL NOT CONVERTED, PERMIT EXPIRED

DATE DRILLING BEGAN: _____ FINISHED: _____
ELEVATION: KB 690 DF 15 GR 675
ROTARY: FROM 0 TO 3,500 CABLE: FROM _____ TO _____
T.D.: 3,500 P.B.T.D. 3,496

TEST DATA:

WERE ELECTRIC OR OTHER WIRELINE LOGS RUN: ☒ YES ☐ NO
TYPE OF LOG: Compensated Neutron/Litho Density Gamma Ray Caliper DATE: 11/4/2009
TYPE OF LOG: Laterlog SP Micro Resistivity Gamma Ray DATE: 11/4/2009
TYPE OF LOG: Cement Bond Log VDL Cement Map Temp Pressure DATE: 2/3/2010
WAS WELL CORED: ☐ YES ☒ NO INTERVAL CORED: _____
DRILL STEM TEST RUN: ☐ YES ☒ NO ZONE TESTED: _____

CONSTRUCTION DATA:

CASING	SIZE	SETTING DEPTH	SACKS CEMENT	HOLE SIZE	TOP OF CEMENT	TOP DETERMINED BY
SURFACE	9.625	350	200	12.25	0	
INTERMED./MINE STRING / OR LINER						
PRODUCTION	3.5	3,496	920	8.5	0	

TUBING: TYPE: None SIZE: _____

PACKER: 1. BRAND AND TYPE: None SETTING DEPTH: _____

2. BRAND AND TYPE: _____ SETTING DEPTH: _____

WELL COMPLETION DATA FOR PRODUCTION / INJECTION FORMATIONS:

FORMATION NAME	LITHOLOGY	PERF. INTERVAL	OPEN HOLE INTERVAL	ACIDIZED / FRACTURED / OTHER (LIST AMOUNTS USED AND OTHER DETAILS)
St Peter	sand	None	3276 Top	
New Albany	shale	None	2085 Top	
Tops given for information purpose				

PRODUCTION INFORMATION:

PRODUCING FORMATIONS: None

DATE OF FIRST PRODUCTION (OIL TO TANK) _____

DATE OF TEST: (STARTED TESTING TO TANK) _____

LENGTH OF TEST: _____

INITIAL PRODUCTION RATE:

OIL _____ BBLs PER DAY WATER _____ BBLs PER DAY GAS _____ MCF

INJECTION INFORMATION:

INJECTION / DISPOSAL FORMATION(s): None

TYPE OF INJECTED FLUID: ☐ FRESHWATER ☐ SALTWATER ☐ OTHER (SPECIFY) _____


SOURCE OF INJECTED FLUID: _____

DATE OF FIRST INJECTION: _____

RATE PER DAY: _____ BBLs WATER AT _____ PSI.

_____ MCF GAS AT _____ PSI.

UNDER PENALTIES OF PERJURY, I DECLARE THAT I HAVE EXAMINED THIS REPORT, INCLUDING ACCOMPANYING STATEMENTS AND DOCUMENTS, AND TO THE BEST OF MY KNOWLEDGE, IT IS TRUE, CORRECT, AND COMPLETE.



 SIGNATURE OF PERMITTEE OR DESIGNEE

Decatur Corn Plant Manager

 TITLE

4666 Faries Parkway

 ADDRESS

4/15/2010

 DATE

Decatur, IL

 CITY, STATE



ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Office of Mines and Minerals

Division of Oil and Gas
(217) 557-6379

One Natural Resources Way
Springfield, Illinois 62702-1271



OG-5 WELL DRILLING REPORT

Type of Well: ☐ Oil Producer ☐ Observation ☐ Type of Report: ☐ New Well
☐ Gas Producer ☐ Gas Storage ☐ Conversion
☐ Class II Injection ☐ D&A ☐ DOPH
☐ Water Supply ☒ Other Geophysical mo ☐ Deepening
☐ Workover

Permittee: Archer Daniels Midland Company Permittee # _____
 Well Name: Geophysical Monitoring Well # 1 Permit # _____ Reference # _____
 Location: 390 ft S, 185 ft W of NE NW NW API No. _____
 County: Macon Section: 5 Township: 16N Range: 3E

Drilling Data:

Date Drilling Began: 10/29/2009 Finished: 11/06/2009 T.D. 3,500
 Elevation: KB: 690 DF: 15 GR 675 Rotary: From: 0 To: 3,500
 Air Rotary: From: _____ To: _____ Cable: From: _____ To: _____

Test Data:

Were Electric or other wireline logs run? ☒ YES ☐ NO Type of Logs: _____
Compensated Neutron/Litho Density Gamma Ray Caliper, Laterlog SP Micro Resistivity Gamma Ray
 Was well cored? ☐ YES ☒ NO Interval(s) cored: _____
 Drill Stem test run? ☐ YES ☒ NO Zone(s) Tested: _____
 Attach a copy of drill stem test results

Geological Data: (Fill out or attach copy of geologists report)

FORMATION	DEPTH		FORMATION DETERMINED BY
	Top	Bottom	
West Franklin	460	482	<input type="checkbox"/> Samples <input type="checkbox"/> Geophysical Log <input checked="" type="checkbox"/> Other: <u>Offset 160 ft away</u> List any oil and gas shows: (Give depth): <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
Renault	1,279	1,293	
Aux Vases	1,293	1,312	
St Louis	1,374	1,530	
New Albany	2,084	2,215	
Maquoketa	2,610	2,722	
Trenton	2,814	2,942	
St Peter	3,276	3,470	
Shakopee	3,470		<div style="border: 1px solid black; height: 40px; width: 100%;"></div>

Mark Brown
Signature of Permittee or Designee

4666 Faries Parkway

Address

Decatur, IL 62526

City, State, Zip

This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined in the Ill. Compiled Stat. Ch. 225, pars. 725 et. seq. Failure to disclose this information will result in this form not being processed. This form has been approved by the Forms Management Center.